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1. ERIKS operating companies

ECON wafer type ball valves are being delivered by several ERIKS operating companies on a worldwide basis. In this manual these will be referred to as 'ERIKS', the individual terms of delivery of the ERIKS operating company having executed the order are applicable.

2. Product description

The ECON wafer type ball valves are designed according to EN 1983 and should be used in accordance with EN 1092 pressure-temperature rating and the information in our latest catalogue or on our website www.eriks.com Ball valves are marked according to EN 19. The marking makes the identification of the valve easier and contains:

- size (DN in mm or Inch)
- pressure class
- body and bonnet material marking
- ECON logo
- heat numbers
- tag plate

3. Requirements for maintenance staff

The staff assigned to assembly, operating and maintenance tasks should be qualified to carry out such jobs and in any circumstance, ensure personal safety

4. Transport and storage

Transport and storage should always be carried out with the ball complete closed and the valves should be protected against external forces, influence and destruction of the painting layer as well. The purpose of the painting layer is to protect the valve against rust, during transport and storage. The valves should be stored in an unpolluted space and should also be protected against all atmospheric circumstances. There should be taken care of the temperature and humidity in the room, in order to prevent condensate formation.

5. Function

ECON ball valves are designed to stop the flow of a medium. The valve is closed by turning the lever clockwise; please don't use tools to increase the torque on the lever. It is recommended to use the ball valve in a complete open or closed position. An intermediate position must be avoided as much as possible, to protect the seats.

6. Application

The ECON ball valves are used in industrial applications with clean gasses and liquids. The valves are designed for standard operating conditions. For the use in extreme conditions e.g. highly corrosive media, it is recommended to mention this at the ordering stage, to verify whether the valve is suitable. The installation designer is responsible for the valve selection, suitable for the working conditions. The valves are unsuitable, without written permission of an ERIKS company, to apply for hazardous media as referred into Regulation (EC) No 1272/2008.

7. Installation

During the installation of the wafer type ball valves, the following rules should be observed:

- make sure before an installation that the ball valves were not damaged during the transport or storage.
- make sure that applied ball valves are suitable for working conditions, medium used in the plant and the right system connections, according to pressure and temperature limits as per the tag plate.
- to take off dust caps if the valves are provided with them.
- the interior of the ball valve and pipeline must be free from foreign particles.
- the valve should be assembled in the pipeline in open position, for a correct functioning, the valve must be stress free mounted in the pipeline, supports must be arranged to prevent any additional stress, caused by the weight of the valve or the pipeline.
- the valve may be fitted in any position and direction in the pipeline.
- mount the pipeline in such a way that harmful forces, excessive vibrations, bending and tensional forces are avoided.
- for easy operating, the clear distance around the lever shall be not less than 100 MM.
- tighten the flange bolt crosswise using the stipulated torque, see Table A
- before plant startup, especially after repairs carried out, flush the pipeline, with fully opened ball.

Warning:

When the valve is used at the very end of the pipelines, the end cap of the valve must be facing and connecting towards the pipeline. Be extremely careful that it should never be facing on the opposite direction (away from the pipeline). Please refers to the below picture for the correct valve direction when the valve is installed under such circumstances.

8. Maintenance

Before starting any service jobs, make sure that the medium supply to the pipeline is stopped, pressure is decreased to ambient pressure, the pipeline is completely cleaned and ventilated and the plant is cooled down. Always keep safety instructions in mind and take all personal safety precautions.

During maintenance, the following rules should be observed:

- keep always personal safety precautions in mind and always use appropriate protection e.g. clothing, masks, gloves etc.
- be alert that the temperature still can be very high or low and can cause burns.
- be alert that a closed ball can contain medium under pressure and a opened ball can contain some medium in the cavity-space behind the ball.
- check the ball valve on all possible leakages.
- dust, grease and medium residual, must be frequently cleaned of the valve body and all moving parts, such as stem, to guarantee all operating functions.
- if required replace the stem seal, for safety reasons we recommend that the stem seal can only can be replaced when the valve is depressurized, drained and ventilated. Please see for the needed torque information Table A.
- to ensure a safe operation we recommend to check the ball valves at an interval of three months.

Re-tighten packing.

- should a leakage occur at the gland packing, retighten the stem (gland) nut (13).
- take care that the stem nut (13) are not tighten too much. Normally the leakage can be stopped by simple turning the stem nut (13) by 30°-60°

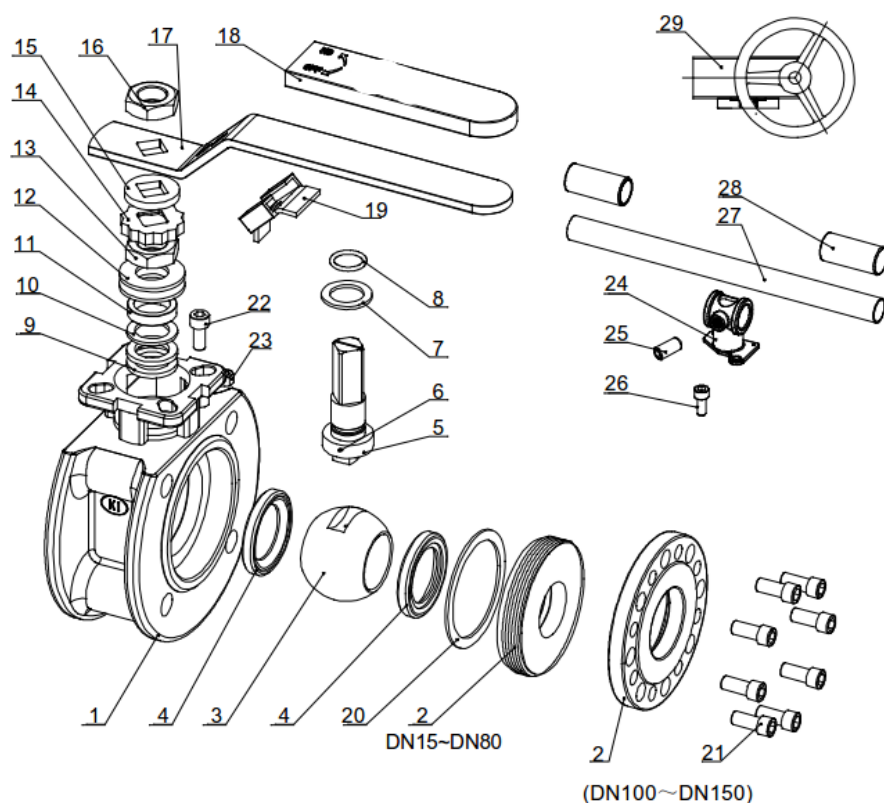
Replacement of seats and seals

Disassembly

- place the valve in half-open position and flush the line to remove any hazardous material from the valve body.
- place the valve in close position, remove both counter flange bolts & nuts and lift valve from line.
- remove handle nut (16), handle (17) or actuator set, stop-lock-cap (14), stem nut (13), Belleville washer (12), gland (11), bush (10), stem packing (9).
- remove cap (2), separated from body (1), remove body gasket (20).
- make sure that the ball is in closed position, thus the ball (3) can be taken out easily from the body, then take out the body ball seat.
- push the stem (5) down into the body cavity and remove, then remove stem O-ring (8), packing (9) from the body.

Reassembly

- reassembly process is reverse sequence of disassembly.
- clean and inspect all parts, full replacement of all soft parts (seats and seals) are strongly recommended.
- tighten the cap (2) crosswise using the stipulated torque value. See Table A
- tighten the stem nut (13) using the stipulated torque value. See Table A
- cycle the valve slowly with gentle back and forth motion to build gradually to full quarter turn.



**Table A: Torque values for body inserts, body bolts and stem nuts.
For the DIN and ASME ball valves.**

Fig. 7343 & 7383		Threaded body insert			Stem nut	
PN10/PN16	PN25/PN40	Thread	Torque (Nm)		Size	Torque (Nm)
DN15		M48*1.5	110～125		7/16-20UNF	9～12
DN20		M52*1.5	130～145		7/16-20UNF	9～12
DN25		M60*1.5	155～180		9/16-18UNF	12～16
DN32		M70*1.5	240～270		9/16-18UNF	12～16
DN40		M80*1.5	305～335		3/4-16UNF	17～22
DN50		M95*2	450～480		3/4-16UNF	17～22
DN65		M115*2	650～685		7/8-14UNF	25～32
DN80		M132*2	730～765		7/8-14UNF	25～32
PN10/PN16	PN25/PN40	Body bolts			Stem nut	
		Size	Torque (Nm)		Size	Torque (Nm)
			A2-70	8.8		
DN100		M12	50	67	1-1/8-12UNF	42～50
	DN100	M16	127	170		
DN125		M14	80	107	1-3/8-12UNF	65～75
DN150	DN125	M16	127	170		
	DN150	M20	248	331		

Fig. 7343 & 7383		Threaded body insert			Stem nut	
CL 150	CL 300	Thread	Torque (Nm)		Size	Torque (Nm)
1/2		M42*1.5	110～125		3/8-24UNF	9～12
3/4		M52*1.5	130～145		3/8-24UNF	9～12
1		M60*1.5	155～180		9/16-18UNF	12～16
1.1/4		M70*1.5	240～270		9/16-18UNF	12～16
1.1/2		M80*1.5	305～335		5/8-18UNF	17～22
2		M95*2	450～480		5/8-18UNF	17～22
2.1/2		M115*2	650～685		7/8-14UNF	25～32
3		M132*2	730～765		7/8-14UNF	25～32
CL 150	CL 300	Body bolts			Stem nut	
		Size	Torque (Nm)		Size	Torque (Nm)
			A193 B8	A2- 70		
4	-	9/16-12UNC	84	84	1-1/8-12UNF	42～50

9. Service and repair

All service and repair jobs should be carried out by authorized staff, using suitable tools and use original spare parts (packing, gasket, etc.) of the same valve size.

- welding repair and drilling on the valve is forbidden.
- it is forbidden to disassemble the valve and replace seats or seals when the valve is under pressure.
- before new seats or seals are placed, the areas where they are placed, must be cleaned.
- after replacement of seats or seals it is necessary to check the valve operation and tightness of all connections. Tightness test should be carried out.
- after installation, we recommend to check the ball valve at an interval of three months.

10. Troubleshooting

It is essential that the safety regulations are observed when identifying the fault.

Problem	Possible cause	Corrective measures
No flow	The ball valve is closed	Open the ball valve
	Dust caps were not removed	Remove dust caps
Little flow	Valve not completely open	Open valve completely
	Piping system clogged	Check piping system
Valve difficult to open	Stuffing box seal too tight	Slacken nut
	Wrong direction of rotation	Turn counter clockwise to open
	Ball seat damaged by foreign particles.	Replace the ball seats
Leakage across the stem	Stuffing box gland slack	Tighten stuffing box gland, if necessary renew stuffing box packing
Leakage across valve seat	Valve not properly closed	Pull lever tight without tools
	Seat damaged by foreign particles	Replace the ball seats
	Medium contaminated	Clean valve and install dirt screen
Operating failure	Packing too tight	Loosen gland nut

11. Removal

All dismantled and rejected valves cannot be disposed with household waste. The valves are made of materials which can be re-used and should be delivered to designated recycling centers.